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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,181	09/09/2003	Chun-Iun Chiu	CHIU3030/EM	1619
2292	7590	11/30/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LUU, AN T	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/657,181

**Applicant(s)**

CHIU ET AL.

**Examiner**

An T. Luu

**Art Unit**

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-17 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-4,6,7,9-11,13,14,16-17,19-21 is/are rejected.
- 7) ☒ Claim(s) 2,5,12 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Amendment filed 9-29-05 has been received and entered in the case. Some of allowable features indicated in the previous Office Action are withdrawn and a new ground of rejection is presented as indicated below.

#### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation “microchip control unit” as required by claim 3 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by the Seong reference (U.S. Patent 5,606,296).

Seong discloses in figure 3 an apparatus comprising a duty cycle converting circuit 301 for receiving a first PWM signal  $V_o$  and then generating a duty cycle reference voltage  $V_{con}$  based on a first duty cycle of the first PWM signal, wherein the duty cycle reference voltage is a one-to-one mapping function of the first duty cycle ( $V_{con}$  is derived from  $V_o$  with respect to  $V_{oref}$ ), and a frequency fixed PWM signal generating circuit (the rest of the circuit), coupled to the duty cycle converting circuit, for receiving the duty cycle reference voltage and then outputting a second PWM signal (PWM output) having a fixed frequency, wherein the second PWM signal has a second duty cycle determined on the basis of the duty cycle reference voltage, and the second duty cycle is a one-to-one mapping function of the duty cycle reference voltage (“PWM output” is derived from  $V_{con}$  and  $V_{tr}$ ) as required by claim 1. Regarding the recitation of duty cycle and frequency ranges, they cannot be relied upon to distinguish over the Seong reference because they are seen as intended use (i.e., when the claim is directed to a circuit device, any recitation concerning the input or output signal of such circuit device is not part of the inventive circuit device). Only structural and functional limitations are given patentable weight.

As to claim 4, Seong discloses the frequency fixed PWM signal generating circuit comprising a frequency controller (100 and 200) for providing a frequency control signal Vtr to determine the fixed frequency of the second PWM signal, and a PWM signal generator 302, coupled to the duty cycle converting circuit and the frequency controller, for generating the second PWM signal in response to the duty cycle reference voltage and the frequency control signal.

As to claim 7, Seong discloses (col. 2, line 64) Vtr being a continuous triangular wave signal.

As to claim 9, Seong discloses in col. 1, lines 14-18, the operating frequencies being beyond tens of kilohertzes.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Seong reference (U.S. Patent 5,606,296).

Seong discloses in figure 3 all the claimed limitation including PWM signal generating circuit implemented by a microchip control unit (col. 4, lines 15-18). Seong does not disclose the microchip control unit is set through software program. However, it is common nowadays that software program is used for automation control. Therefore, it would have been obvious to one

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skilled in the art at the time the invention was made to incorporate software program for either automation and/or selecting purpose. Further, a software program is not patentable.

As to claims 13 and 20, the scopes of claims are similar to that of claim 3. Therefore, they are rejected for the same reason set forth above.

6. Claims 6, 10-11, 14, 16, 17, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Seong reference (U.S. Patent 5,606,296) in view of the Hoffman reference (U.S. Patent 5,457,435).

Seong discloses all the claimed invention of claim 6 including a operational amplifier 302 having a non-inverting input terminal connected to the duty cycle converting circuit for receiving the duty cycle reference voltage and an inverting terminal connected to the frequency controller for receiving the frequency control signal as partially required by the claim. Seong does not disclose a resistor having a terminal connected to an output terminal of the operational amplifier such that the second PWM signal is output through another terminal of the resistor as required by claim.

Hoffman discloses in figure 2 a PWM circuit comprising a operational amplifier 224 having an output coupled to a resistor 230 and the PWM signal is output through another terminal of the resistor as required by claim.

It would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Hoffman into that of Seong since a resistor is commonly used to drive a signal.

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A skilled artisan in the art would have been motivated to combine the above prior art to shape the PWM signal to a desired level suitable for downstream device of the circuit as required by a particular application.

As to claims 10 and 11, the scopes of claims are similar to that of claim 6. Therefore, they are rejected for the same reason set forth above. It is noted that the limitation “thereby controlling the speed of the fan motor” is seen as “intended use”; and resistor 230 (figure 2) and load 112 (figure 1) of Hoffman are seen as a driving circuit and fan motor, respectively. Also, the recitation of duty cycle and frequency ranges cannot be relied upon to distinguish over the Seong reference because it is seen as intended use (i.e., when the claim is directed to a circuit device, any recitation concerning the input or output signal of such circuit device is not part of the inventive circuit device). Only structural and functional limitations are given patentable weight.

As to claim 14, the scope of claim is similar to that of claim 4. Therefore, it is rejected for the same reason set forth above.

As to claims 16-17 and 19, the scopes of claims are similar to that of claims 6, 7 and 9. Therefore, they are rejected for the same reasons set forth above.

As to claim 21, the scope of claim is the same as combination of claims 10, 11, 13 and 16. Therefore, it is rejected for the same reasons set forth above.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

8. Claims 2, 5, 12 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to disclose an apparatus comprising elements being configured as recited in claim. Specifically, none of the prior art teaches or suggests, among other things, the claimed structures of “*the duty cycle converting circuit*” as recited in claims 2 and 12; and the limitation “*a microchip control unit set through software programs*” as recited in claims 3 and 13; the claimed structure of “*the frequency controller*” as required by claims 5 and 15.

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An T. Luu whose telephone number is 571-272-1746. The examiner can normally be reached on 7:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

An T. Luu  
11-17-05 *ATL*

  
Kenneth B. Wells  
Primary Examiner